AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (Currently amended): A vehicle tyre data monitoring system comprising a wheel mounted sensor means adapted to transmit one or more of pressure, temperature, angular velocity, and force vector data for a tyre as a digital serial datagram through a two-wire, electromagnetically coupled, communication channel to a chassis mounted reader means, the communication channel comprising an electromagnetic coupling means~~being~~ adapted to have constant mutual inductance for all stationary or rotating positions of the tyre and to simultaneously supply power to the sensor means and receive the data for processing and subsequent display to a user of the system,

wherein the sensor means includes a sensor coil that is mounted annularly on a rim of the wheel and is coiled around a first axis, and

wherein the reader means includes a receiver coil that is coiled around a second axis that is noncoincident with the first axis.

Claim 2 (Original): The vehicle tyre data monitoring system of claim 1 wherein the sensor means comprises a

three or more terminal sensor subsystem having at least separate ground, power and data connections which is converted to a two terminal sensor subsystem for transmitting the data across the communication channel to the reader means, with a first terminal being for a ground connection and a second terminal being for a combined power and data connection.

Claim 3 (Original): The vehicle tyre data monitoring system of claim 2 wherein the two-wire communication channel superimposes the transmission of the data on the power connection as a serial datagram that is received by the receiving means.

Claim 4 (Original): The vehicle tyre data monitoring system of claim 3 wherein the datagram is decoded by the reader means to provide decoded information that is made available to a microprocessor system for analysis and display of the tyre data to a user of the system.

Claim 5 (Currently amended): A two-wire communication channel for a vehicle tyre data monitoring system, the channel including electromagnetic coupling~~continuous contacting~~ means for communicating between a sensor means mounted on a wheel of the vehicle and a reader means

mounted on a chassis of the vehicle, and being adapted to transmit one or more of pressure, temperature, angular velocity and force vector data for a tyre as a digital serial datagram from the sensor means to the reader means and to supply power from the reader means to the sensor means, the supply of power being simultaneous with the transmission and reception of the data, wherein the electromagnetic coupling means ~~communication channel~~ includes a sensor coil ~~a rotational coupling means having a first part~~ mounted on a rotatable rim for the wheel and a receiver coil ~~second part~~ mounted on a non-rotating component of a hub for the wheel, the sensor coil and the receiver coil being adapted to maintain a constant mutual inductance therebetween during a complete rotation of the wheel, the sensor and receiver coils ~~first and second parts~~ providing a non-contacting, two wire communication channel for the data monitoring system,

wherein the sensor coil is coiled around a first axis and the receiver coil is coiled around a second axis that is noncoincident with the first axis.

Claim 6 (Canceled)

Claim 7 (Currently amended): A vehicle wheel to hub electromagnetic coupling ~~electrical mating~~ interconnection

in a tyre data monitoring system for the transmission thereacross of one or more of pressure, temperature, angular velocity and force vector data for a tyre mounted on the wheel, the electromagnetic coupling~~electrical mating~~ interconnection comprising a first part mounted on a rotatable rim of the wheel and adapted to receive the data from a sensor means, and a second part mounted on a non-rotating component of a hub for the wheel, the second part being adapted to maintain a constant air gap distance~~mate~~ with the first part when the wheel is mounted on the hub so as to maintain constant mutual inductance between the first part and the second part for allowing~~allow~~ the data to be transmitted from the first part to the second part, the second part being further adapted to transmit the data to a reader means mounted on a chassis of the vehicle for processing and subsequent display to a user of the system,

wherein the first part includes a sensor coil that is mounted annularly on the rim and that is coiled around a first axis, and

wherein the second part includes a receiver coil that is coiled around a second axis that is noncoincident with the first axis.

Claim 8 (Currently amended): The vehicle wheel to hub electromagnetic coupling~~electrical mating~~ interconnection of claim 7 wherein the constant air gap distance between~~mating of~~ the first part and~~with~~ the second part is maintained after each~~occurs automatically during the~~ mounting of the wheel on the hub~~, and demating occurs automatically during dismounting of the wheel from the hub~~.

Claim 9 (Currently amended): A two-wire communication channel for a vehicle tyre data monitoring system, the channel including electromagnetic transforming means for communicating between a sensor means mounted on a wheel of the vehicle and a reader means mounted on a chassis of the vehicle, and being adapted to transmit one or more of pressure, temperature, angular velocity and force vector data for a tyre as a digital serial datagram from the sensor means to the reader means and to supply power from the reader means to the sensor means, the supply of power being simultaneous with the transmission and reception of the data, wherein a first part of the electromagnetic transforming means is mounted annularly on a rim of the wheel and a second part of the electromagnetic transforming means is mounted on a non-rotating component of a hub for the wheel, the first and second parts being

divided by an air gap and providing a non-contacting, two wire communication channel for the data monitoring system,

wherein the second part comprises a receiver coil mounted on the non-rotating component of the hub for the wheel, and the first part comprises a sensor coil so mounted annularly on the rim of the wheel as to maintain a constant and sufficiently proximate distance to the receiver coil during rotation of the wheel for electromagnetic induction to occur, and

wherein the sensor coil is coiled around a first axis and the receiver coil is coiled around a second axis that is noncoincident with the first axis.

Claim 10 (Currently amended): An electromagnetic coupling in a two-wire communication channel for a vehicle tyre data monitoring system, the electromagnetic coupling comprising a first part mounted annularly on a rim of a wheel of the vehicle, and a second part mounted on a non-rotating component of a hub for the wheel, the first part and the second part being adapted to maintain electromagnetic induction therebetween during rotation of the wheel for the transmission of decodable data for the tyre from a sensor means mounted on the wheel to a reader means mounted on the chassis,

wherein the second part comprises a receiver coil mounted on the non-rotating component of the hub for the wheel, and the first part comprises a sensor coil so mounted annularly on the rim of the wheel as to maintain a constant and sufficiently proximate distance to the receiver coil during rotation of the wheel for electromagnetic induction to occur, and

wherein the sensor coil is coiled around a first axis and the receiver coil is coiled around a second axis that is noncoincident with the first axis.

Claim 11 (Canceled)

Claim 12 (Currently amended): The two-wire communication channel of claim 9~~11~~ wherein the sensor coil includes a power supply circuit and derives power to operate the sensing and transmission of the data from an electromagnetic flux generated by the receiver coil serving as a power connection, the electromagnetic flux causing the power supply circuit of the sensor coil to develop sufficient DC voltage to enable the sensor means to be energised and to transmit the data to the reader means, the data being adapted to modulate the electromagnetic flux so as to superimpose the transmission of the data on the power connection as a serial datagram,

the so modulated signal being detected and decoded by the reader means to enable the data to be processed and displayed to a user of the system.

Claim 13 (Canceled)

Claim 14 (Currently amended): The electromagnetic coupling of claim 10~~13~~ wherein the sensor coil includes a power supply circuit and derives power to operate the sensing and transmission of the data from an electromagnetic flux generated by the receiver coil serving as a power connection, the electromagnetic flux causing the power supply circuit of the sensor coil to develop sufficient DC voltage to enable the sensor means to be energised and to transmit the data to the reader means, the data being adapted to modulate the electromagnetic flux so as to superimpose the transmission of the data on the power connection as a serial datagram, the so modulated signal being detected and decoded by the reader means to enable the data to be processed and displayed to a user of the system.